

## **REMARKS**

Claims 44-60 have been cancelled. The Specification and claims 1 and 26 have been amended to correct a typographical matter, no new matter has been added through these amendments. Claims 61-67 have been added. Claims 1-43 and 61-67 are pending in the application.

Claims 1-43 stand rejected as anticipated and/or obvious in view of U.S. Patent 5,763,922 to Chau ("Chau"), U.S. Patent 6,436,845 to Kamath, et al. ("Kamath"), and U.S. Patent 5,962,069 to Schindler, et al. ("Schindler"). Applicant requests reconsideration of such rejections.

Referring first to claim 1, the claim recites exposing a silicon-comprising surface to activated nitrogen to form a peak nitrogen concentration within the silicon-comprising surface of at least 15% (atom percent). Claim 1 is believed allowable over the cited references for at least the reason that the references cannot be combined to teach or suggest exposing a silicon-comprising surface to activated nitrogen to form a silicon-comprising surface having a peak nitrogen concentration of at least 15% (atom percent).

For a reference to anticipate a claim, the reference must teach every element of the claim (MPEP §2131, 8<sup>th</sup> Ed.). Furthermore, to establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations (MPEP §706.02(j)). The teaching or suggestion to make the claimed combination and the reasonable expectation of

success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ.2d 1438 (Fed. Cir. 1991). The cited references either alone or to the extent they may be combined do not teach or suggest all of the elements of the pending claims.

As the Examiner has found, the cited references alone neither teach nor suggest the recited element of a silicon-comprising surface having a peak nitrogen concentration of at least 15 % (atom percent). As applicant understands the office action, claim 1 has been rejected as obvious in view of Chau with Kamath, the motivation for combining these references being that the references are related to same field of endeavor. Applicant submits that, when viewed as whole, there insufficient motivation to combine Chau with Kamath to establish a prima facie case obviousness meeting the limitations of claim1.

Even if the cited references are related to the same field of endeavor, the references cannot be combined to establish a prima facie case of obviousness because the references as a whole specifically teach away from their combination. Chau cursorily discloses the plasma nitridation of a substrate with a power of between 500-2000 watts but makes no mention of the peak nitrogen concentration greater than 5%. Kamath discloses methods for depositing silicon nitride by chemical vapor deposition and mentions that the silicon nitride may have approximately 20 % nitrogen. However, Kamath, at Col. 3, lines 14-34, specifically teaches that nitridation cannot achieve a concentration of greater than 5% and that nitridation adversely affects the assembly. This being the case, a person of ordinary skill in the art of transistor devices would not be motivated to combine the nitridation teachings of Chau with the deposition teachings of Kamath because Kamath teaches that nitridation cannot achieve a 20% nitrogen concentration and nitridation adversely affects the assembly. Therefore, these references cannot be combined to

establish a prima facie case of obviousness in an attempt to meet the limitations of claim 1.

Claim 1 is therefore allowable for at least the reason that the cited references, either alone or in combination, do not teach or suggest all of its limitations.

Claims 2-5 depend from claim 1, and are therefore allowable for at least the reasons discussed above regarding claim 1.

Referring next to claim 6, a method of forming a transistor device is provided that in pertinent part recites providing a silicon-comprising surface and exposing the silicon-comprising surface to activated nitrogen for at least about 20 seconds to convert the silicon-comprising surface to a material comprising silicon and nitrogen; the activated nitrogen being formed by exposing a nitrogen-containing precursor to a plasma maintained at a power of at least about 750 watts. Claim 6 is believed allowable over the cited references for at least the reason that claim 6 recites exposing a silicon-comprising surface to activated nitrogen for 20 seconds.

Claim 6 stands rejected as anticipated by Chau, however, Chau does not teach or suggest the 20 second exposure limitation of claim 6. In particular, Chau merely states that a power of between 500 and 2000 watts can be utilized. No mention is made of a time requirement. Furthermore, for at least the reasons stated above, the Kamath reference cannot be combined with Chau to render the limitations of claim 6 obvious.

Claim 6 is therefore allowable for at least the reason that it recites a 20 second time element, and this limitation is neither taught nor suggested by the cited references. Applicant requests allowance of claim 6 is the Examiner's next action.

Claims 7-15 all depend from claim 6 and are therefore allowable for at least the reasons discussed above regarding claim 6.

Claim 16 recites a method of forming transistor devices that includes exposing a silicon-comprising surface to activated nitrogen for at least about 20 seconds. As described above, this element is neither taught nor suggested by the cited references, therefore claim 16 is allowable. Applicant requests allowance of claim 16 in the Examiner's next action.

Claims 17-25 all depend from claim 16 and are therefore allowable for at least the reasons discussed above regarding claim 16.

Referring next to claim 26, the claim recites, in pertinent part, forming a dielectric material that includes exposing silicon-comprising material to activated nitrogen to form a peak nitrogen concentration within the exposed silicon-comprising material of at least about 15 atom percent. As stated above the cited references do not teach or suggest this claim limitation. Applicant requests allowance of claim 26 in the Examiner's next action.

Claims 27-35 all depend from claim 26 and are therefore allowable for at least the reasons discussed above regarding claim 26.

Referring to claim 36, the claim recites, in pertinent part, exposing a silicon-comprising surface to activated nitrogen for at least about 20 seconds. As stated above, the cited references do not teach or suggest this claim limitation. Applicant requests allowance of claim 36 in the Examiner's next action.

Claims 37-43 all depend from claim 36, and therefore are allowable for at least the reasons discussed above regarding claim 36.

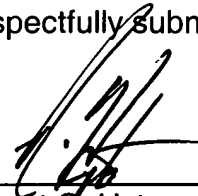
Applicant has cancelled claims 44-60 and added new claims 61-67. No new matter has been added through the addition of these new claims. New claims 61-67 find support at, for example, Figs 2-6 and Pages 7-9 and 12-15 of the specification. New claims 61-67 are believed allowable for at least the reason they recite limitations neither taught or

suggested by the prior art. For example, claim 61 recites, in pertinent part, providing a substrate having a surface and incorporating at least 15% nitrogen into the surface by exposing the surface to activated nitrogen. Claim 61 also recites forming a pair of source/drain regions within the substrate with each of the source/drain regions comprising a heavily doped portion and a lightly doped portion. The cited references do not teach or suggest these features.

Claims 1-43 and 61-67 are believed to be in immediate condition for allowance. Therefore, action to that end is earnestly solicited.

Respectfully submitted,

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